ASRock

H610TM-ITX

User Manual

Version 1.0
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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

AUSTRALIA ONLY

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage caused by our goods. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Contents

Chapter 1 Introduction

Thank you for purchasing H610TM-ITX motherboard. In this documentation, Chapter 1 and 2 contains the introduction of the motherboard and step-by-step installation guides. Chapter 3 contains the operation guide of the software and utilities. Chapter 4 contains the configuration guide of the BIOS setup.

Because the motherboard specifications and the BIOS software might be updated, the content of this documentation will be subject to change without notice.

1.1 Package Contents

- H610TM-ITX Motherboard (Thin Mini-ITX Form Factor)
- 1 x Thin-Mini ITX I/O Shield (Optional)
- 1 x Mini ITX I/O Shield (Optional)
- 1 x Serial ATA (SATA) Data Cable (Optional)
- 1 x SATA Power Cable (Optional)
- 3 x Screws for M.2 Sockets (M2*2) (Optional)
- 1 x Standoff for M.2 Socket (Optional)

1.2 Specifications

Platform	• Thin Mini-ITX Form Factor (Compatible with Mini-ITX) • Solid Capacitor design
CPU	• Supports 14th, 13th & 12th Gen Intel® Core™ Processors (LGA1700) • 4 Power Phase design • Supports Intel® Hybrid Technology • Supports Intel® Turbo Boost Max 3.0 Technology
Chipset	• Intel® H610
Memory	• Dual Channel DDR4 Memory Technology • 2 x DDR4 SO-DIMM Slots • Supports DDR4 non-ECC, un-buffered memory up to 3200* * Please refer to Memory Support List on ASRock's website for more information. (http://www.asrock.com/) • Max. capacity of system memory: 64GB • Supports Intel® Extreme Memory Profile (XMP) 2.0
Expansion Slot	• 1 x M.2 Socket (Key E), supports type 2230 WiFi/BT module
Graphics	• Intel® UHD Graphics Built-in Visuals and the VGA outputs can be supported only with processors which are GPU integrated. • Intel® Xe Graphics Architecture (Gen 12) • Four graphics output options: 2 x HDMI, 1 x LVDS, 1 x D-Sub ports • Supports 2 x HDMI 2.1 TMDS Compatible with max. resolution up to 4K x 2K (4096x2160) @ 60Hz HDMI x 1 port (Rear) HDMI x 1 port (Internal) * (Optional) DisplayPort 1.4 with DSC (compressed) max. resolution up to 8K (7680x4320) @ 60Hz / 5K (5120x3200) @ 120Hz

	• Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz • Supports LVDS with max. resolution up to 1920x1080 @ 60Hz • Supports HDCP 2.3 with HDMI 2.1 TMDS Compatible and DisplayPort 1.4 Ports
Audio	• Realtek ALC269 Audio Codec • 1 x MIC IN • 1 x Line out
LAN	• PCIE x1 Gigabit LAN 10/100/1000 Mb/s • Realtek RTL8111H • Supports Wake-On-LAN • Supports Lightning/ESD Protection • Supports Energy Efficient Ethernet 802.3az • Supports PXE
I/O	• 1 x DC Jack (Compatible with the 19V power adapter) • 1 x D-Sub Port * (Optional) 1 x COM Port • 2 x HDMI Ports: HDMI1 (Rear), HDMI2 (Internal) * (Optional) 1 x DisplayPort 1.4 • 1 x USB 3.2 Gen2 Type-A Port (Supports ESD Protection) • 1 x USB 3.2 Gen2 Type-C Port (Supports ESD Protection) * (Optional) 2 x USB 3.2 Gen2 Type-A Ports (Supports ESD Protection) • 2 x USB 2.0 Ports (Support ESD Protection) • 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) • HD Audio Jacks: Line out / Microphone
Storage	• 2 x SATA3 6.0 Gb/s Connectors, support NCQ, AHCI and Hot Plug • 1 x Blazing M.2 Socket (M2_1), supports M Key type 2260/2280 M.2 PCI Express module up to Gen5 x4 * Supports NVMe SSD as boot disks • 1 x M.2 Socket (M2_3), supports M Key type 2280 M.2 SATA3 6.0 Gb/s module

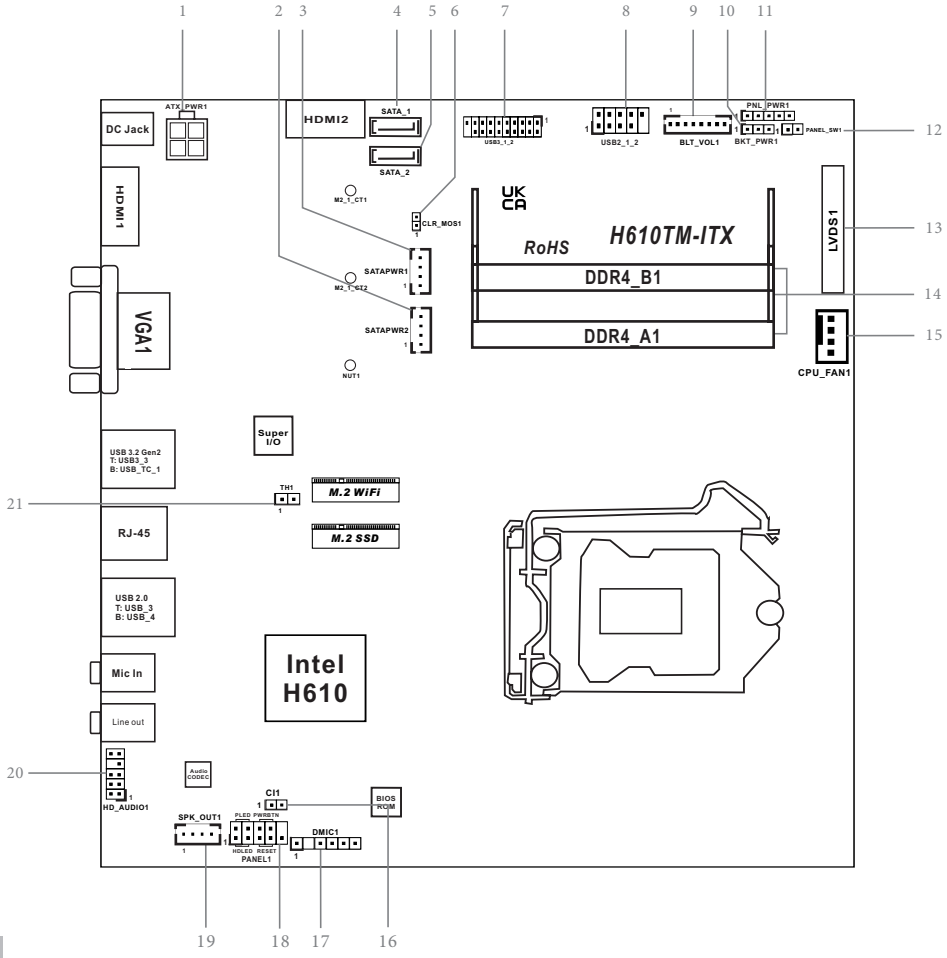
Connector	• 1 x Chassis Intrusion Header • 1 x Panel Voltage Selection Header • 1 x Backlight Inverter Voltage Selection Header • 1 x FPD Brightness Header • 1 x Panel Off Header • 1 x LVDS Connector • 1 x CPU Fan Connector (4-pin) * The CPU Fan Connector supports the CPU fan of maximum 1A (12W) fan power. • 1 x 4 pin 19V Power Connector (2-Pin) • 1 x Thermal Sensor Header • 1 x Front Panel Audio Connector • 1 x Internal Speaker Header (4-Pin) • 1 x Digital MIC Header • 2 x SATA Power Connectors • 1 x USB 2.0 Header (Supports 2 USB 2.0 ports) (Supports ESD Protection) • 1 x USB 3.2 Gen1 Header (Supports 2 USB 3.2 Gen1 ports) (Supports ESD Protection)
BIOS Feature	• AMI UEFI Legal BIOS with GUI support • ACPI 6.0 Compliant wake up events • SMBIOS 2.7 Support
Hardware Monitor	• CPU Temperature Sensing • CPU Fan Tachometer • CPU Quiet Fan (Auto adjust chassis fan speed by CPU temperature) • CPU Fan Multi-Speed Control • CASE OPEN detection • Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore
OS	• Microsoft® Windows® 10 64-bit / 11 64-bit
Power	• 1 x DC Jack (Supports 19V DC Power Adapters)

Certifications	• FCC, CE • ErP/EuP ready (ErP/EuP ready power supply is required)

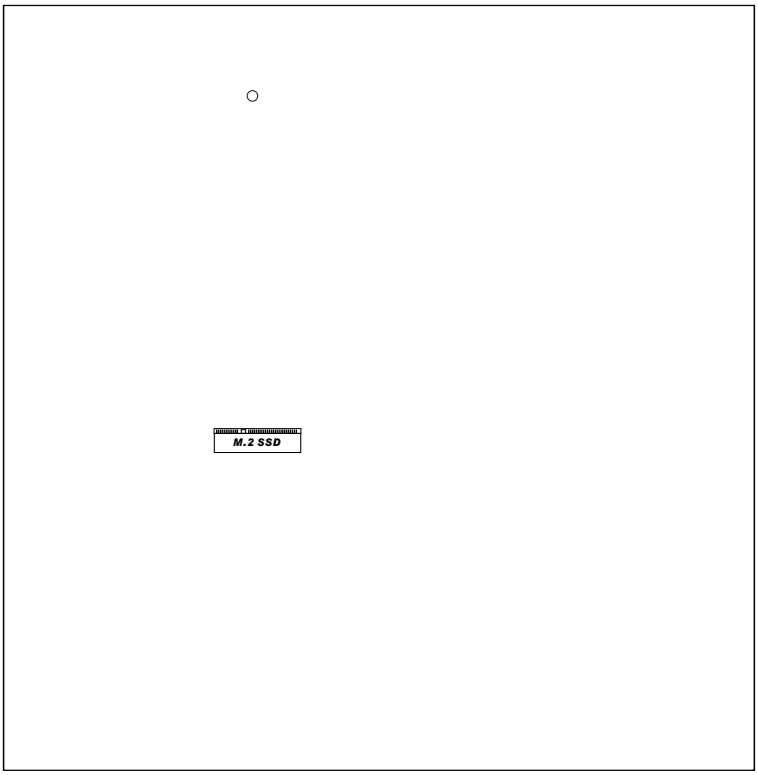
Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

1.3 Motherboard Layout

Top Side View

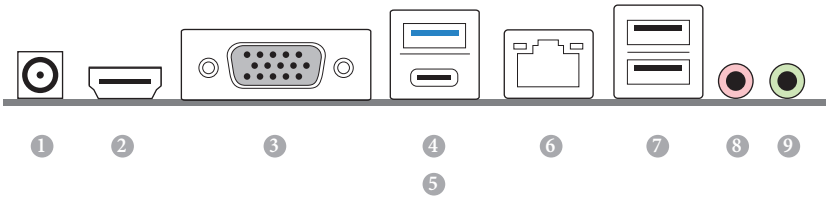


Back Side View



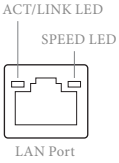
No.	Description
1	4 pin 19V Power Connector (ATX_PWR1)
2	SATA Power Connector (SATAPWR2)
3	SATA Power Connector (SATAPWR1)
4	SATA3 Connector (SATA_1)
5	SATA3 Connector (SATA_2)
6	Clear CMOS Jumper (CLR_MOS1)
7	USB 3.2 Gen1 Header (USB3_1_2)
8	USB 2.0 Header (USB2_1_2)
9	FPD Brightness Header (BLT_VOL1)
10	Backlight Inverter Voltage Selection Header (BKT_PWR1)
11	Panel Voltage Selection Header (PNL_PWR1)
12	Panel Off Header (PANEL_SW1)
13	LVDS Connector (LVDS1)
14	2 x 260-pin DDR4 SO-DIMM Slots (DDR4_A1, DDR4_B1)
15	CPU Fan Connector (CPU_FAN1)
16	Chassis Intrusion Header (CI1)
17	Digital MIC Header (DMIC1)
18	System Panel Header (PANEL1)
19	Internal Speaker Header (SPK_OUT1)
20	Front Panel Audio Header (HD_AUDIO1)
21	Thermal Sensor Header (TH1)

1.4 I/O Panel



No.	Description	No.	Description
1	DC Jack**	6	LAN RJ-45 Port*
2	HDMI Port (HDMI1)	7	USB 2.0 Ports (USB_3_4)
3	D-Sub Port	8	Microphone (Pink)
4	USB 3.2 Gen2 Type-A Port (USB3_3)	9	Line out (Lime)
5	USB 3.2 Gen2 Type-C Port (USB_TC_1)		

**There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.*



Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Green	100Mbps connection
On	Link	Green	1Gbps connection

*** Please use a 19V power adapter for the DC jack. This jack accepts dual barrel plugs with an inner diameter of 2.5 mm and an outer diameter of 5.5 mm, where the inner contact is +19 (±10%) DC and the shell is (centre positive).*

DELTA	*DELTA-ADP-150TB-150W/19V*
HP	*HP-TBC-BA52-150W/19V*
FSP	*FSP-FSP150-ABAN1-150W/19V*
DELL	*FA130PE1-00-130W/19.5V*
DELL	*LA90PE0-01-90W/19.5V*
DELTA	*DELTA-ADP-180TB-180W/19V*
FSP	*FSP-FSP180-ABBN3-180W/19V*

This motherboard is available with support for either 4-pin ATX 19V power or DC-in power supplies. Please do not use two kinds of power supplies at the same time! Doing so may damage the motherboard components and devices. When you use the DC-in power adapter, please use the onboard SATA power connector to get the power for HDDs.

Chapter 2 Installation

This is a Thin Mini-ITX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

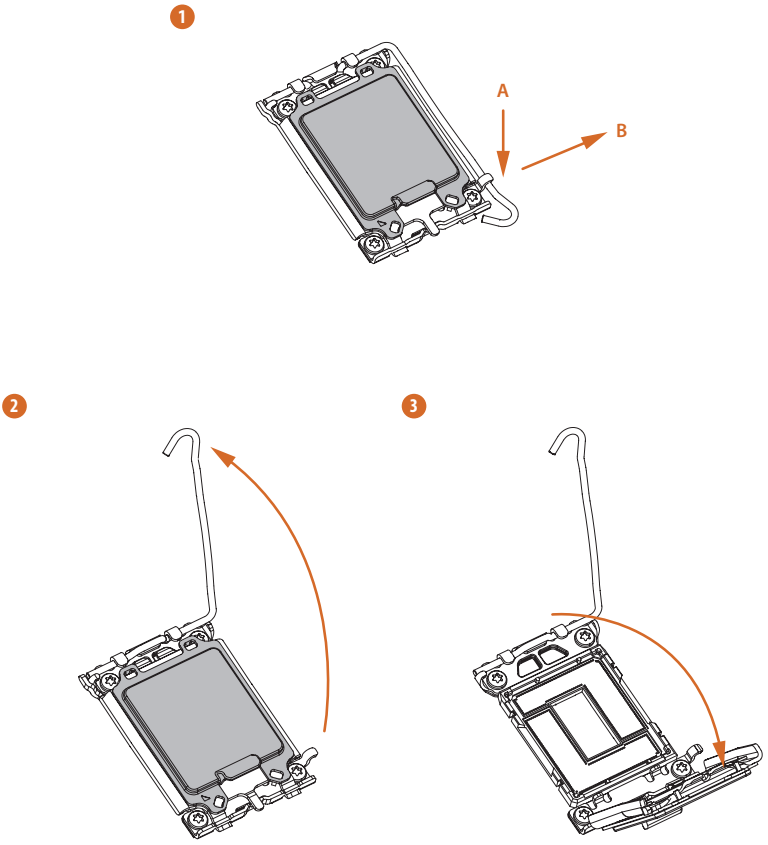
Pre-installation Precautions

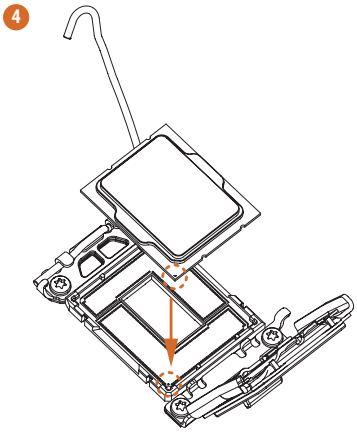
Take note of the following precautions before you install motherboard components or change any motherboard settings.

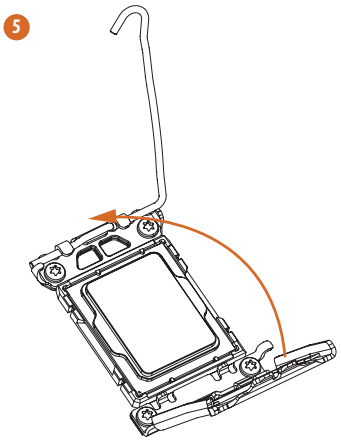
- Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.
- In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
- Hold components by the edges and do not touch the ICs.
- Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
- When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

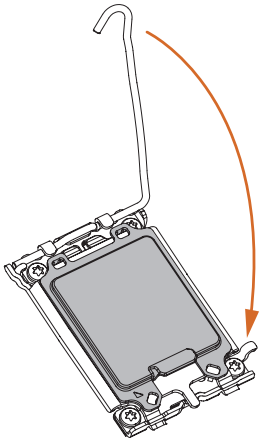
2.1 Installing the CPU

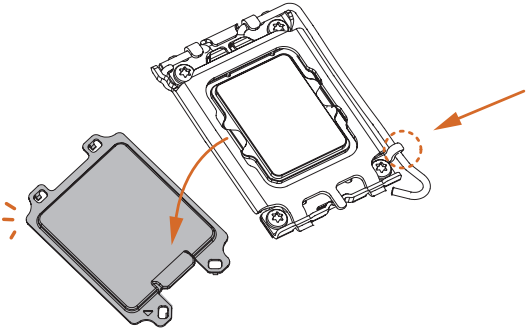
1. *Before you insert the 1700-Pin CPU into the socket, please check if the **PnP cap** is on the socket, if the CPU surface is unclean, or if there are any **bent pins** in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.*
2. *Unplug all power cables before installing the CPU.*





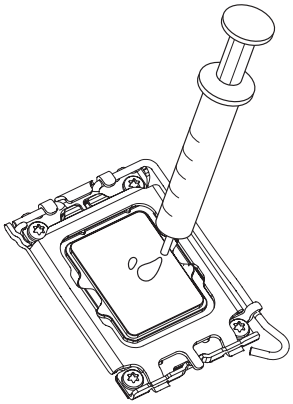




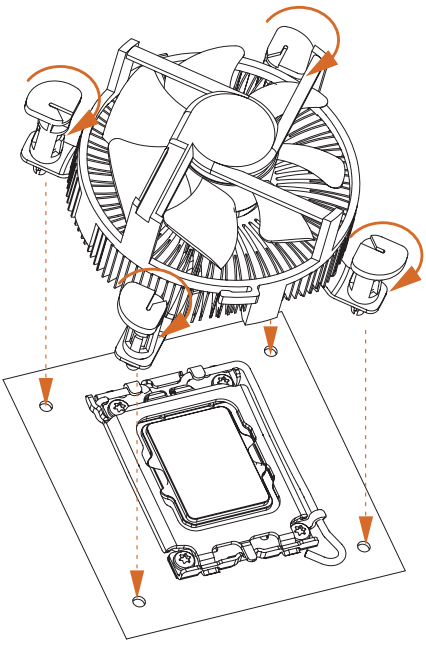


Please save and replace the cover if the processor is removed. The cover must be placed if you wish to return the motherboard for after service.

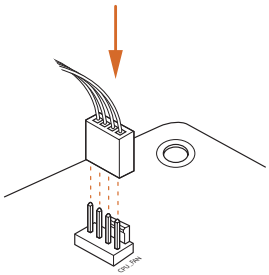
2.2 Installing the CPU Fan and Heatsink



1



2



2.3 Installing Memory Modules (SO-DIMM)

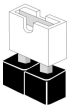
This motherboard provides two 260-pin DDR4 (Double Data Rate 4) SO-DIMM slots.

It is not allowed to install a DDR, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and SO-DIMM may be damaged.

The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

2.4 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is "Short". If no jumper cap is placed on the pins, the jumper is "Open".



Short

Open

Clear CMOS Jumper (CLR_MOS1) (see p.6, No. 6)	 2-pin Jumper

CLR_MOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short the pins on CLR_MOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, and user default profile will be cleared only if the CMOS battery is removed. Please remember toremove the jumper cap after clearing the CMOS.

If you clear the CMOS, the case open may be detected. Please adjust the BIOS option "Clear Status" to clear the record of previous chassis intrusion status.

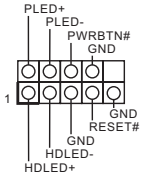
Backlight Inverter Voltage Selection Header (3-pin BKT_PWR1) (see p.6, No. 10)		1-2 : +19V 2-3 : +12V
Panel Voltage Selection Header (5-pin PNL_PWR1) (see p.6, No. 11)		1-2 : +3V 2-3 : +5V 4-5 : +12V

Warning:
If selected Backlight Power or Panel Power is higher than panel's spec, it may damage the panel.

2.5 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.

System Panel Header
(9-pin PANEL1)
(see p.6, No. 18)



Connect the power button, reset button and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Button):
Connect to the power button on the chassis front panel. You may configure the way to turn off your system using the power button.

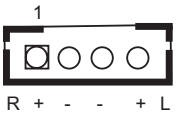
RESET (Reset Button):
Connect to the reset button on the chassis front panel. Press the reset button to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power button, reset button, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Internal Speaker Header
(4-pin SPK_OUT1)
(see p.6, No. 19)

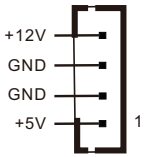


Please connect the chassis speaker to this header.

Serial ATA3 Connectors
(SATA_1:
see p.6, No. 4)
(SATA_2:
see p.6, No. 5)

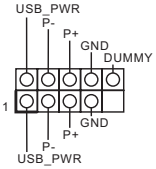
These two SATA3 connectors support SATA data cable for internal storage devices with up to 6.0 Gb/s data transfer rate.

SATA Power Connectors
(SATAPWR1:
see p.6, No. 3)
(SATAPWR2:
see p.6, No. 2)



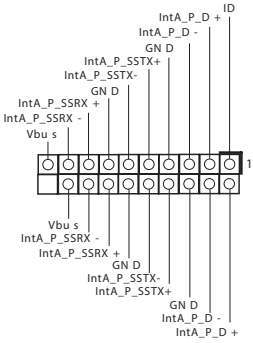
Please connect SATA power cables.

USB 2.0 Header
(9-pin USB2_1_2)
(see p.6, No. 8)



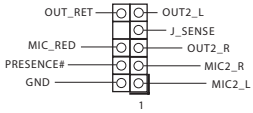
There is one USB 2.0 header on this motherboard. Each USB 2.0 header can support two ports.

USB 3.2 Gen1 Header
(19-pin USB3_1_2)
(see p.6, No. 7)



There is one USB 3.2 Gen1 header on this motherboard. This USB 3.2 Gen1 header can support two ports.

Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.6, No. 20)

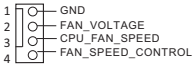


This header is for connecting audio devices to the front audio panel.

English

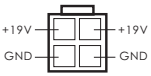
1. *High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.*
2. *If you use an AC'97 audio panel, please install it to the front panel audio header by the steps below:*
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for the HD audio panel only. You don't need to connect them for the AC'97 audio panel.
   E. To activate the front mic, go to the "FrontMic" Tab in the Realtek Control panel and adjust "Recording Volume".

CPU Fan Connector
(4-pin CPU_FAN1)
(see p.6, No. 15)



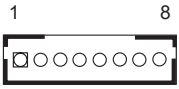
This motherboard provides a 4-Pin CPU fan (Quiet Fan) connector. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

ATX 19V Power Connector
(4-pin ATX_PWR1
(see p.6, No. 1)



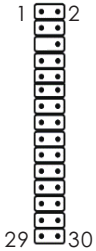
Please connect an ATX 19V power supply to this connector.
*The power supply plug fits into this connector in only one orientation.

FPD Brightness Header
(8-pin BLT_VOL1)
(see p.6, No. 9)



1: BKLT_PWR
2: BKLT_PWR
3: BKLT_EN
4: BKLT_PWM
5: GND
6: GND
7: Brightness_Up
8: Brightness_Down

LVDS Panel Connector
(30-pin LVDS1)
(see p.6, No. 13)



PIN	Signal Name	PIN	Signal Name
1	LCD_VDD	**16**	CLK1P
2	LCD_VDD	**17**	A3N
3	LCD_VDD	**18**	A3P
4	GND	**19**	A4N
5	N/A	**20**	A4P
6	GND	**21**	A5N
7	A0N	**22**	A5P
8	A0P	**23**	A6N
9	A1N	**24**	A6P
10	A1P	**25**	GND
11	A2N	**26**	GND
12	A2P	**27**	CLK2N
13	GND	**28**	CLK2P
14	GND	**29**	A7N
15	CLK1N	**30**	A7P

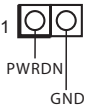
Chassis Intrusion Header
(2-pin CI1)
(see p.6, No. 16)

This motherboard supports CASE OPEN detection feature that detects if the chassis cove has been removed. This feature requires a chassis with chassis intrusion detection design.

Thermal Sensor Header
(2-pin TH1)
(see p.6, No. 21)

Connect a 2-pin thermistor cable to this header to use an external thermal sensor with the motherboard.

Panel Off Header
(2-pin PANEL_SW1)
(see p.6, No. 12)



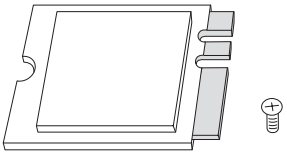
This header can be used to connect a switch that turns on/ off the LVDS panel display's backlight.

Digital MIC Header (5-pin DMIC1) (see p.6, No. 17)		1: +5V 2: No pin 3: DMIC_CLK 4: GND 5: DMIC_DATA 6: +3.3V

2.6 M.2 WiFi/BT Module Installation Guide

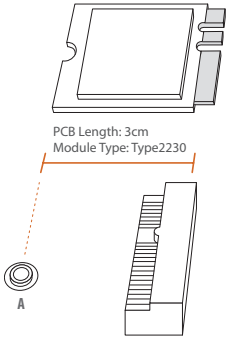
The M.2 is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The M.2 Socket (Key E) supports type 2230 WiFi/BT module.

Installing the WiFi/BT module



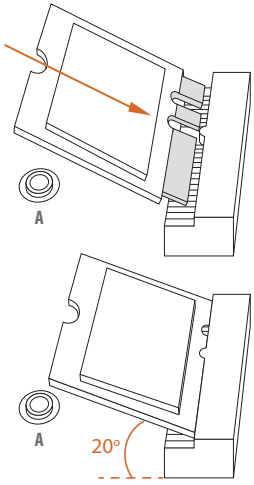
Step 1

Prepare a type 2230 WiFi/BT module and the screw.



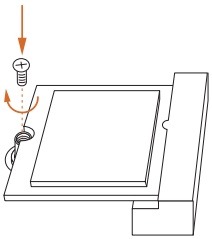
Step 2

Find the nut location to be used.



Step 3

Gently insert the WiFi/BT module into the M.2 slot. Please be aware that the module only fits in one orientation.



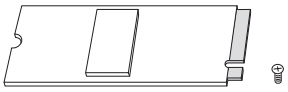
Step 4

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

2.7 M.2 SSD Module Installation Guide (M2_1)

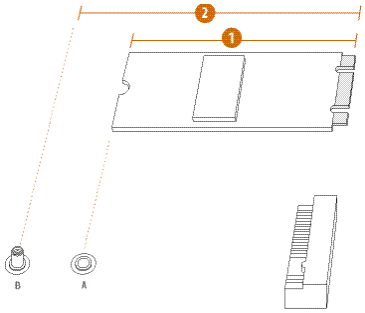
The M.2 is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The Blazing M.2 Socket (M2_1) supports M Key type 2260/2280 M.2 PCI Express module up to Gen5 x4.

Installing the M.2 SSD Module



Step 1

Prepare a M.2 SSD module and the screw.



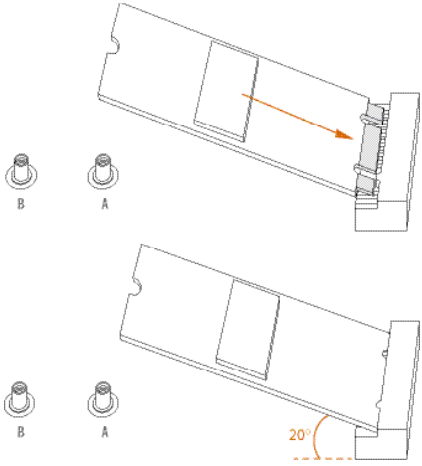
Step 2

Depending on the PCB type and length of your M.2 SSD module, find the corresponding nut location to be used.

No.	1	2
Nut Location	A	B
PCB Length	6cm	8cm
Module Type	Type2260	Type 2280

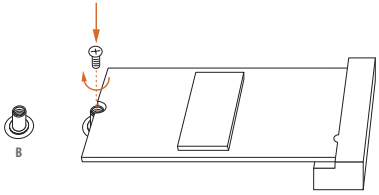
Step 3

Peel off the yellow protective film on the nut A. Prepare the M.2 standoff that comes with the package, and hand tighten it into the nut A. Skip Step 3 if your M.2 SSD module is Type 2280.



Step 4

Align and gently insert the M.2 SSD module into the M.2 slot. Please be aware that the M.2 SSD module only fits in one orientation.



Step 5

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

M.2 SSD Module Support List (M2_2)

M2_PCIE:

Vendor	Capacity	P/N
ADATA	256GB	ADATA ASX8200 Pro-256G
ADATA	512GB	ADATA SX8200 PRO-512GB (ASX8200PNP)
ADATA	512GB	ADATA ASX7000NPC-512GT-C (XPG SX7000)
Apacer	240GB	Apacer AP240GZ280-240G
Crucial	1TB	CRUCIAL P1-1T
Crucial	500GB	CRUCIAL P1-500G
INTEL	16GB	Intel Optane Memory 16GB (MEMPEK1W016GA)(NVMe)
INTEL	32GB	Intel Optane Memory 32GB (MEMPEK1J032GA)(NVMe)
INTEL	256GB	INTEL 760P-SSDPEKKW256G8-256GB
INTEL	128GB	INTEL 600P-SSDPEKKW128G7-128GB
INTEL	512GB	INTEL 660P SERIES-SSDPEKNW512G8-512G
INTEL	512GB	INTEL 6000P-SSDPEKKF512G7-512GB
KINGS-TON	240GB	KINGSTON A1000-SA1000M8/240G (Gen3 x2)
KINGS-TON	480GB	KINGSTON KC1000 SKC1000/480G
PLEXTOR	256GB	PLEXTOR PX-256M8SeGN-256GB
PLEXTOR	256GB	PLEXTOR PX-256M8PeG-256GB
PLEXTOR	512GB	PLEXTOR M9PEG-PX-512M9PEGN-512G
PATRIOT	240GB	PATRIOT Hellfire M2 (240G)
Samsung	512GB	Samsung 950PRO-MZVKV512-512GB
Samsung	128GB	Samsung MZ-VLW1280-128GB (PM961)
Samsung	512GB	Samsung MZ-V7P512-512G (970PRO)
Samsung	250GB	Samsung MZ-V7E250-250G (970EVO)
Samsung	250GB	Samsung MZ-V6E250-250G (960 EVO)
Team	240GB	Team CARDEA-240G
TOSHIBA	256GB	TOSHIBA OCZ RD400-256G
TOSHIBA	128GB	TOSHIBA XG3-128G
WD	512GB	WD SDAPNUW-512G-1006 (SN520) (Gen3 x2)
WD	1TB	WD Black SN750-1TB (WDS100T3X0C-00SJG0)
WD	512GB	WD WDS512G1X0C-00ENX0-512GB

2.5" HDD:

Vendor	Capacity	P/N
TOSHIBA	1TB	TOSHIBA-MQ02ABD100H-MLC-NAND8G+HD1T-1T
SEAGATE	500GB	SEAGATE-ST500LM021-3Y/P-500G
SEAGATE	1TB	SEAGATE-FIRECUDA-LX015-ST1000LX015-5Y/P-7mm-1T-W/8G
WD	750GB	WD-BLACK-WD7500BPKX-750G
WD	1TB	WD-RED-WD10JFCX-INTELLIPOWER-1T
WD	1TB	WD-BLUE-WD10SPZX-00Z10T0-1T-3Y-02
HGST	1TB	HGST-HTS721010A9E630-1TB

2.5" SSD:

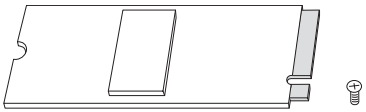
Vendor	Capacity	P/N
KINGSTON	120GB	KINGSTON-V300-SV300S37A-120G
KINGSTON	120GB	KINGSTON-HYPERX-FURY-RGB-SHFR200/240G-240G-W/RGB CABLEx1
KINGSTON	240GB	KINGSTON-HYPERX-SAVAGE-SHSS37A/240G
TOSHIBA	128GB	TOSHIBA-Q300 PRO-HDTS412AZSTA-128G
TOSHIBA	120GB	TOSHIBA-Q300-HDTS712AZSTA-120G
WYVO	240GB	WYVO-APS1-SSB240GTLC4-SA-AF-240G
ADATA	120GB	ADATA-GAMING-XPG-SX930-ASX930S3-120GM-C-120G
ADATA	256GB	ADATA-ULTIMATE-SU900-ASU900SS-256GM-C-256G
APACER	120GB	APACER-PANTHER-AS350-AP120GAS350-1-120G
TRAN-SCEND	128GB	TRANSCEND-SSD340K-TS128GSSD340K-128G
TRAN-SCEND	128GB	TRANSCEND-SSD370S-TS128GSSD370S-128G
INTEL	240GB	INTEL-730SERIES-SSDSC2BP240G4R5-240GB
INTEL	128GB	545S SERIES-SSDSC2KW128G8X1-128G
SANDISK	128GB	SANDISK-X300-SD7SB6S-128G
SANDISK	240GB	SANDISK-EXTREME PRO-SDSSDXPS-240G
PLEXTOR	256GB	PLEXTOR-M6V-PX-256M6V-256G
PLEXTOR	256GB	PLEXTOR-M6 PRO-PX-256M6PRO-256G
CRUCIAL	250GB	CRUCIAL-MX500-CT250MX500SSD1-250G-5Y
CRUCIAL	120GB	CRUCIAL-BX500-CT120BX500SSD1-120G-3Y
OCZ	120GB	OCZ-VECTOR180-VTR180-25SAT3-120G-120G
OCZ	120GB	OCZ-TRION100-TRN100-25SAT3-120G
WD	120GB	WD-GREEN-WDS120G2G0A-00JH30-120G-3Y
WD	250GB	WD-BLUE-WDS250G2B0A-00SM50-250G-5Y

Vendor	Capacity	P/N
UMAX	240GB	UMAX-S330-HDUM330SSD240G-240G-3Y
PIONEER	120GB	PIONEER-APS-SL3N-APS-SL3N-120-120G-3Y
ANACONDA	240GB	ANACONDA-TS SERIES-TS240201803718-240G-3Y
KLEVV	240GB	KLEVV-NEO-N500-D240GAA-N500-240G-3Y
TCELL	240GB	TCELL-TT650-240G-3Y
Liteon	240GB	LITE-ON-MU3-PH6-PH6-CE240-L2-240G-3Y
V-Color	240GB	V-COLOR-VSS100-VSS100-240G-FO-240G-3Y
HIKVISION	480GB	HIKVISION-C100-HS-SSD-C100-480G-3Y
SAMSUNG	250GB	SAMSUNG-860EVO-MZ-76E250BW-MZ7LH-250HAHQ-250G
TEAM	250GB	TEAM GROUP-T-FORCE-DELTA RGB-T253TR250G3C313-5V-250G-3Y

2.8 M.2 SSD Module Installation Guide (M2_3)

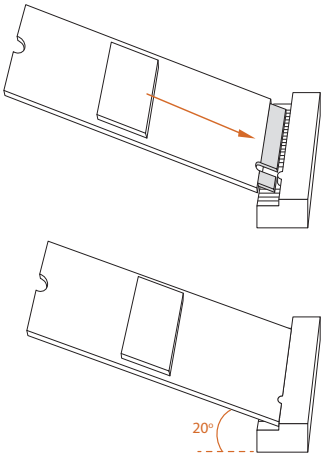
The M.2 is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The M.2 Socket (M2_3), supports M Key type 2280 M.2 SATA3 6.0 Gb/s module.

Installing the M.2 SSD Module



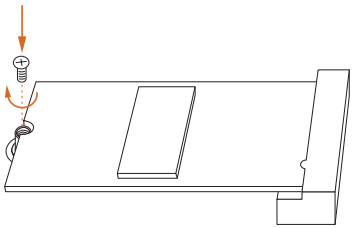
Step 1

Prepare a M.2 SSD module and the screw.



Step 2

Gently insert the M.2 SSD module into the M.2 slot. Please be aware that the M.2 SSD module only fits in one orientation.



Step 3

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

M.2 SSD Module Support List (M2_3)

M2_SATA:

Vendor	Capacity	P/N
ADATA	512GB	ADATA ASU800NS38-512GT-C
Crucial	240GB	Crucial-CT240M500SSD4-240GB
Crucial	250GB	Crucial-CT250MX500SSD4-250G
ezlink	120GB	ezlink P51B-80-120GB
LITEON	256GB	LITEON LJH-256V2G-256GB (2260)
SanDisk	128GB	SanDisk X400-SD8SN8U-128G
SanDisk	128GB	Sandisk Z400s-SD8SNAT-128G-1122
Transcend	64GB	Transcend TS64GMTS400-64GB (2242)
Transcend	256GB	Transcend TS256GMTS800-256GB
PLEXTOR	128GB	PLEXTOR PX-128M6G-2260-128GB (2260)
INTEL	240GB	INTEL-SSDSCKJF240A5-QS63-MLC-240G
INTEL	240GB	INTEL-540SSERIES-SSDSCKKW240H6-240G
V-Color-	240GB	V-Color-240G
WD	1TB	WD BLUE WDS100T1B0B-00AS40-1TB
WD	240GB	WD GREEN WDS240G1G0B-00RC30-240GB
WD	500GB	WD BLUE 3D NAND WDS500G2B0B-00YS70-500G

Chapter 3 Auto Driver Installer

After you install the Windows OS and boot into the system, a notification will pop up to help you to install and update required drivers.

Chapter 4 UEFI SETUP UTILITY

4.1 Introduction

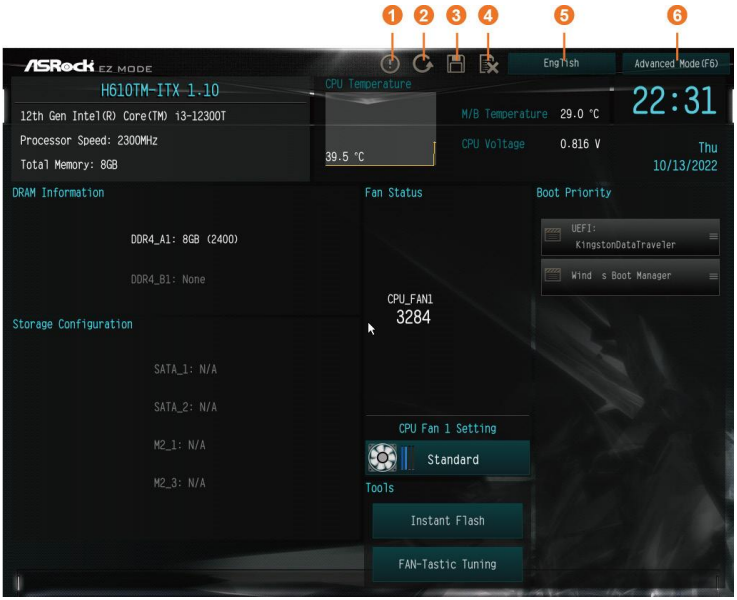
This section explains how to use the UEFI SETUP UTILITY to configure your system. You may run the UEFI SETUP UTILITY by pressing <F2> or <Del> right after you power on the computer, otherwise, the Power-On-Self-Test (POST) will continue with its test routines. If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

4.2 EZ Mode

The EZ Mode screen appears when you enter the BIOS setup program by default. EZ mode is a dashboard which contains multiple readings of the system's current status. You can check the most crucial information of your system, such as CPU speed, DRAM frequency, SATA information, fan speed, etc.

Press <F6> or click the "Advanced Mode" button at the upper right corner of the screen to switch to "Advanced Mode" for more options.



No.	Function
1	Help
2	Load UEFI Defaults
3	Save Changes and Exit
4	Discard Changes
5	Change Language
6	Switch to Advanced Mode

4.3 Advanced Mode

The Advanced Mode provides more options to configure the BIOS settings. Refer to the following sections for the detailed configurations.

To access the EZ Mode, press <F6> or click the "EZ Mode" button at the upper right corner of the screen.

4.3.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	For setting system time/date information
OC Tweaker	For overclocking configurations
Advanced	For advanced system configurations
Tool	Useful tools
H/W Monitor	Displays current hardware status
Security	For security settings
Boot	For configuring boot settings and boot priority
Exit	Exit the current screen or the UEFI Setup Utility

4.3.2 Navigation Keys

Use <←> key or <→> key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

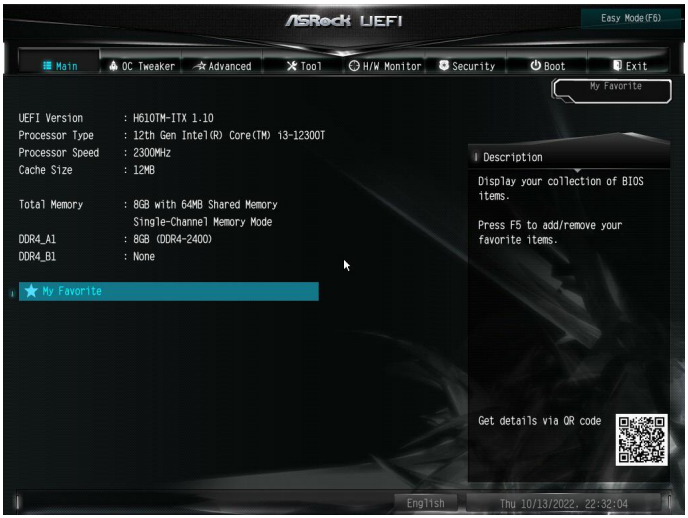
Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Description
+ / -	To change option for the selected items
<Tab>	Switch to next function
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F5>	Add / Remove Favorite
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

4.4 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.

The availability and location of BIOS settings can be different for different models and BIOS versions.



My Favorite

Display your collection of BIOS items. Press F5 to add/remove your favorite items.

4.5 OC Tweaker Screen

In the OC Tweaker screen, you can set up overclocking features.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

Base Frequency Boost

Enjoy the base frequency boost with the hidden power of processors immediately.

CPU Configuration

CPU Turbo Ratio Information

This item allows users to browse the CPU Turbo Ratio information.

CPU Configuration

CPU P-Core Ratio

The CPU speed is determined by the CPU P-Core Ratio multiplied with the BCLK. Increasing the CPU P-Core Ratio will increase the internal CPU clock speed without affecting the clock speed of other components.

AVX2 Ratio Offset

AVX2 Ratio Offset specifies a negative offset from the CPU Ratio for AVX workloads. AVX is a more stressful workload that lower the AVX ratio to ensure maximum possible ratio for SSE workloads.

CPU Cache Ratio

The CPU Internal Bus Speed Ratio. The maximum should be the same as the CPU Ratio.

Min Cache Ratio

The Min Internal Bus Speed Ratio. The maximum should be the same as the CPU Ratio.

BCLK Aware Adaptive Voltage

BCLK Aware Adaptive Voltage enable/disable. When enabled, pcode will be aware of the BCLK frequency when calculating the CPU V/F curves. This is ideal for BCLK OC to avoid high voltage overrides.

Boot Performance Mode

Select the performance state that the BIOS will set before OS handoff.

Ring to Core Ratio Offset

Disable Ring to Core Ratio Offset so the ring and core can run at the same frequency.

SA PLL Frequency Override

Configure SA PLL Frequency.

BCLK TSC HW Fixup

BCLK TSC HW Fixup disable during TSC copy from PMA to APIC.

FLL Overclock Mode

Nominal is good for normal core ratio overclocking. Elevated and Extremely El¬evated are good for high BCLK OC.

UnderVolt Protection

When UnderVolt Protection is enabled, user will not be able to program under voltage in OS runtime. It is recommended to keep it enabled by default.
[Enabled] This option allows BIOS undervolting. Undervolt Protection in Runtime is enabled.
[Disabled] No Undervolt Protection in Runtime.

Intel SpeedStep Technology

Intel SpeedStep technology allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation.

Intel Turbo Boost Technology

Intel Turbo Boost Technology enables the processor to run above its base operating frequency when the operating system requests the highest performance state.

Intel Speed Shift Technology

Enable/Disable Intel Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-sates.

Intel Turbo Boost Max Technology 3.0

Intel Turbo Boost Technology enables the processor to run above its base operating frequency when the operating system requests the highest performance state.

Intel Thermal Velocity Boost Voltage Optimizations

This service controls thermal based voltage optimizations for processors that implment the Intel Thermal Velocity Boost (TVB) feature.

Dual Tau Boost

Enable Dual Tau Boost feature. This is only applicable for CMLS 35W/65W/125W skus. This item is only supported with processors with Config TDP support.

Long Duration Power Limit

Configure Package Power Limit 1 in watts. When the limit is exceeded, the CPU ratio will be lowered after a period of time. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

Long Duration Maintained

Configure the period of time until the CPU ratio is lowered when the Long Duration Power Limit is exceeded.

Short Duration Power Limit

Configure Package Power Limit 2 in watts. When the limit is exceeded, the CPU ratio will be lowered immediately. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

CPU Core Current Limit

Configure the current limit of the CPU core. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

GT Current Limit

Configure the current limit of the GT slice. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

DRAM Configuration

Memory Information

Allows users to browse the serial presence detect (SPD) and Intel extreme memory profile (XMP) for DDR4 modules.

DRAM Timing Configuration

DRAM Reference Clock

Select Auto for optimized settings.

DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

DRAM Gear Mode

High gear is good for high frequency.

Primary Timing

CAS# Latency (tCL)

The time between sending a column address to the memory and the beginning of the data in response.

RAS# to CAS# Delay (tRCD)

The number of clock cycles required between the opening of a row of memory and accessing columns within it.

Row Precharge (tRP)

The number of clock cycles required between the issuing of the precharge command and opening the next row.

RAS# Active Time (tRAS)

The number of clock cycles required between a bank active command and issuing the precharge command.

Command Rate (CR)

The delay between when a memory chip is selected and when the first active command can be issued.

Secondary Timing

Write Recovery Time (tWR)

The amount of delay that must elapse after the completion of a valid write operation, before an active bank can be precharged.

Refresh Cycle Time (tRFC)

The number of clocks from a Refresh command until the first Activate command to the same rank.

RAS to RAS Delay (tRRD_L)

The number of clocks between two rows activated in different banks of the same rank.

RAS to RAS Delay (tRRD_S)

The number of clocks between two rows activated in different banks of the same rank.

Write to Read Delay (tWTR_L)

The number of clocks between the last valid write operation and the next read command to the same internal bank.

Write to Read Delay (tWTR_S)

The number of clocks between the last valid write operation and the next read command to the same internal bank.

Read to Precharge (tRTP)

The number of clocks that are inserted between a read command to a row pre-charge command to the same rank.

Four Activate Window (tFAW)

The time window in which four activates are allowed the same rank.

CAS Write Latency (tCWL)

Configure CAS Write Latency.

Third Timing

tREFI

Configure refresh cycles at an average periodic interval.

tCKE

Configure the period of time the DDR4 initiates a minimum of one refresh command internally once it enters Self-Refresh mode.

tRC

Use this item to change RAS# Cycle Time (tRC) Auto/Manual setting.

Turn Around Timing

Turn Around Timing Optimization

Auto is enabled in general case.

TAT Training Value

tRDRD_sg

Configure between module read to read delay.

tRDRD_dg

Configure between module read to read delay.

tRDRD_dr

Configure between module read to read delay.

tRDRD_dd

Configure between module read to read delay.

tRDWR_sg

Configure between module read to write delay.

tRDWR_dg

Configure between module read to write delay.

tRDWR_dr

Configure between module read to write delay.

tRDWR_dd

Configure between module read to write delay.

tWRRD_sg

Configure between module write to read delay.

tWRRD_dg

Configure between module write to read delay.

tWRRD_dr

Configure between module write to read delay.

tWRRD_dd

Configure between module write to read delay.

tWRWR_sg

Configure between module write to write delay.

tWRWR_dg

Configure between module write to write delay.

tWRWR_dr

Configure between module write to write delay.

tWRWR_dd

Configure between module write to write delay.

TAT Runtime Value

tRDRD_sg

Configure between module read to read delay.

tRDRD_dg

Configure between module read to read delay.

tRDRD_dr

Configure between module read to read delay.

tRDRD_dd

Configure between module read to read delay.

tRDWR_sg

Configure between module read to write delay.

tRDWR_dg

Configure between module read to write delay.

tRDWR_dr

Configure between module read to write delay.

tRDWR_dd

Configure between module read to write delay.

tWRRD_sg

Configure between module write to read delay.

tWRRD_dg

Configure between module write to read delay.

tWRRD_dr

Configure between module write to read delay.

tWRRD_dd

Configure between module write to read delay.

tWRWR_sg

Configure between module write to write delay.

tWRWR_dg

Configure between module write to write delay.

tWRWR_dr

Configure between module write to write delay.

tWRWR_dd

Configure between module write to write delay.

Round Trip Timing

Round Trip Timing Optimization

Auto is enabled in general case.

Round Trip Level

Configure round trip level.

Initial RTL IO Delay Offset

Configure round trip latency IO delay initial offset.

Initial RTL FIF0 Delay Offset

Configure round trip latency FIF0 delay initial offset.

Initial RTL (MC0 C0 A1)

Configure round trip latency initial value.

Initial RTL (MC0 C1 A1)

Configure round trip latency initial value.

Initial RTL (MC1 C0 B1)

Configure round trip latency initial value.

Initial RTL (MC1 C1 B1)

Configure round trip latency initial value.

RTL (MC0 C0 A1)

Configure round trip latency value.

RTL (MC0 C1 A1)

Configure round trip latency value.

RTL (MC1 C0 B1)

Configure round trip latency value.

RTL (MC1 C1 B1)

Configure round trip latency value.

ODT Setting

Dimm ODT Training

ODT values will be optimized by Dimm On-Die Termination Training.

ODT WR (A1)

Configure the memory on die termination resistors' WR for channel A1.

ODT WR (B1)

Configure the memory on die termination resistors' WR for channel B1.

ODT NOM Rd (A1)

Configure the memory on die termination resistors' NOM Rd for channel A1.

ODT NOM Rd (B1)

Configure the memory on die termination resistors' NOM Rd for channel B1.

ODT PARK (A1)

Configure the memory on die termination resistors' PARK for channel A1.

ODT PARK (B1)

Configure the memory on die termination resistors' PARK for channel B1.

Advanced Setting

ASRock Timing Optimization

Configure the fast path through the MRC.

ASRock Second Timing Optimization

Configure the second fast path through the MRC.

MRC Training Respond Time

Try Slowest MRC Training.

Realtime Memory Timing

Configure the realtime memory timings.

[Enabled] The system will allow performing realtime memory timing changes after MRC_DONE.

Reset for MRC Failed

Reset system after MRC training is failed.

MRC Training on Warm Boot

When enabled, memory training will be executed when warm boot.

MRC Fast Boot

Enable Memory Fast Boot to skip DRAM memory training for booting faster.

Voltage Configuration

DRAM Voltage

Use this to configure DRAM Voltage. The default value is [Auto].

AVX Configuration

AVX2 Voltage Guardband Scale Factor

AVX2 Voltage Guardband Scale Factor controls the voltage guardband applied to AVX2 workloads. A value > 1.00 will increase the voltage guardband, and < 1.00 will decrease the voltage guardband.

FIVR Configuration

Core Voltage Mode

Selects between Adaptive and Override Voltage modes. In Override Mode, the voltage selected will be applied over all operating frequencies. In Adaptive mode, the voltage is interpolated only in turbo mode.

Extra Turbo Voltage

Specifies the extra turbo voltage applied while the IA Core is operating in turbo mode.

VF Offset Mode

Selects between Legacy and Selection modes. Need Reset System after enabling OverClocking Feature to initialize the default value. In Legacy Mode, setting a global offset for the entire VF curve. In Selection modes, setting a selected VF point.

VF Configuration Scope

Allows all cores VF curve or per-core VF curve configuration.

Core Voltage Offset

Specifies the offset voltage applied to the IA Core domain. This voltage is specified in millivolts.

Extra Turbo Voltage

Specifies the extra turbo voltage applied while Atom L2 is operating in turbo mode. Uses Mailbox MSR 0x150, cmd 0x10, 0x11. Range 0-2000 mV.

VF Offset Mode

Selects between Legacy and Selection modes. Need Reset System after enabling OverClocking Feature to initialize the default value. In Legacy Mode, setting a

global offset for the entire VF curve. In Selection modes, setting a selected VF point.

Ring Voltage Offset

Specifies the Offset Voltage applied to the Ring domain. This voltage is specified in millivolts. Uses Mailbox MSR 0x150, cmd 0x11. Range -500 to 500 mV.

GT Voltage Mode

Selects between adaptive and Override Voltage modes. In Override Mode the voltage selected will be applied over all operating frequencies. In Adaptive Mode the voltage is interpolated only in turbo mode. Uses Mailbox 0SR 0x150, cmd 0x10, 0x11.

Extra Turbo Voltage

Specifies the extra turbo voltage applied while GT is operating in turbo mode. Uses Mailbox MSR 0x150, cmd 0x10, 0x11. Range 0-2000 mV.

GT Voltage Offset

Specifies the Offset Voltage applied to the GT domain. This voltage is specified in millivolts. Uses Mailbox MSR 0x150, cmd 0x11. Range -500 to 500 mV.

Save User Default

Type a profile name and press enter to save your settings as user default.

Load User Default

Load previously saved user defaults.

Save User UEFI Setup Profile to Disk

It helps you to save current UEFI settings as an user profile to disk.

Load User UEFI Setup Profile from Disk

You can load previous saved profile from the disk.

4.6 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, ACPI Configuration, USB Configuration and Trusted Computing.

Setting wrong values in this section may cause the system to malfunction.

UEFI Configuration

UEFI Setup Style

Select the default mode when entering the UEFI setup utility.

Active Page on Entry

Select the default page when entering the UEFI setup utility.

Full HD UEFI

When [Auto] is selected, the resolution will be set to 1920 x 1080 if the monitor supports Full HD resolution. If the monitor does not support Full HD resolution, then the resolution will be set to 1024 x 768. When [Disable] is selected, the resolution will be set to 1024 x 768 directly.

4.6.1 CPU Configuration

Processor P-Core Information

This item displays the P-Core Information.

Intel Hyper Threading Technology

Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved.

Active Processor Cores

Select the number of cores to enable in each processor package.

CPU C States Support

Enable CPU C States Support for power saving. It is recommended to keep C6 and C7 all enabled for better power saving.

Enhanced Halt State (C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

CPU C6 State Support

Enable C6 deep sleep state for lower power consumption.

CPU C7 State Support

Enable C7 deep sleep state for lower power consumption.

Package C State Support

Enable CPU, PCIe, Memory, Graphics C State Support for power saving.

CFG Lock

This item allows you to disable or enable the CFG Lock.

C6DRAM

Enable/Disable moving of DRAM contents to PRM memory when CPU is in C6 state.

CPU Thermal Throttling

Enable CPU internal thermal control mechanisms to keep the CPU from overheating.

Intel AVX/AVX2

Enable/Disable the Intel AVX and AVX2 Instructions. This is applicable for Big Core only.

Intel Virtualization Technology

Intel Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems.

Hardware Prefetcher

Automatically prefetch data and code for the processor. Enable for better performance.

Adjacent Cache Line Prefetch

Automatically prefetch the subsequent cache line while retrieving the currently requested cache line. Enable for better performance.

Legacy Game Compatibility Mode

When enabled, pressing the scroll lock key will toggle the Efficient cores between being parked when Scroll Lock LED is on and un-parked when LED is off.

4.6.2 Chipset Configuration

Above 4G Decoding

Enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64 bit PCI decoding).

VT-d

Intel® Virtualization Technology for Directed I/O helps your virtual machine monitor better utilize hardware by improving application compatibility and reliability, and providing additional levels of manageability, security, isolation, and I/O performance.

SR-IOV Support

If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.

DMI Link Speed

Configure DMI Slot Link Speed. Auto mode is optimizing for overclocking.

M2_1 Link Speed

Configure M2_1 Slot Link Speed. Auto mode is optimizing for overclocking.

PCI Express Native Control

Select Enable for enhanced PCI Express power saving in OS.

PCIE ASPM Support

This option enables/disables the ASPM support for all CPU downstream devices.

PCH PCIE ASPM Support

This option enables/disables the ASPM support for all PCH PCIE devices.

DMI ASPM Support

This option enables/disables the control of ASPM on CPU side of the DMI Link.

PCH DMI ASPM Support

This option enables/disables the ASPM support for all PCH DMI devices.

Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

Realtek RTL8111H

Enable or disable the onboard network interface controller.

Onboard HD Audio

Enable/disable onboard HD audio. Set to Auto to enable onboard HD audio and automatically disable it when a sound card is installed.

Onboard HDMI HD Audio

Enable audio for the onboard digital outputs.

Onboard WAN Device

Use this item to enable or disable the onboard WAN device.

Deep Sleep

Configure deep sleep mode for power saving when the computer is shut down.

Restore on AC/Power Loss

Select the power state after a power failure. If [Power Off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers.

GNA Device

Use this item to enable or disable the SA GNA device.

Serial Port/UART Switch

Select Serial Port or UART for Port 80 debug.

Active LVDS

This allows you to enable or disable the LVDS.

Panel Type Selection

Use this to select panel type.

4.6.3 Storage Configuration

SATA Controller(s)

Enable/disable the SATA controllers.

SATA Mode Selection

AHCI: Supports new features that improve performance.

Hybrid Storage Detection and Configuration Mode

This item allows you select Hybrid Storage Detection and Configuration Mode.

SATA Aggressive Link Power Management

SATA Aggressive Link Power Management allows SATA devices to enter a low power state during periods of inactivity to save power. It is only supported by AHCI mode.

Hard Disk S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability.

4.6.4 ACPI Configuration

Suspend to RAM

Select disable for ACPI suspend type S1. It is recommended to select auto for ACPI S3 power saving.

PCIE Devices Power On

Allow the system to be waked up by a PCIE device and enable wake on LAN.

RTC Alarm Power On

Allow the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by your operating system.

USB Keyboard/Remote Power On

Allow the system to be waked up by an USB keyboard or remote controller.

USB Mouse Power On

Allow the system to be waked up by an USB mouse.

4.6.5 USB Configuration

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

4.6.6 Trusted Computing

NOTE: Options vary depending on the version of your connected TPM module.

Security Device Support

Use this item to enable or disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Active PCR banks

This item displays active PCR Banks.

Available PCR Banks

This item displays available PCR Banks.

SHA256 PCR Bank

Use this item to enable or disable SHA256 PCR Bank.

SHA384 PCR Bank

Use this item to enable or disable SHA384 PCR Bank.

SM3_256 PCR Bank

Use this item to enable or disable SM3_256 PCR Bank.

Pending Operation

Schedule an Operation for the Security Device.

NOTE: Your computer will reboot during restart in order to change State of the Device.

Platform Hierarchy

Use this item to enable or disable Platform Hierarchy.

Storage Hierarchy

Use this item to enable or disable Storage Hierarchy.

Endorsement Hierarchy

Use this item to enable or disable Endorsement Hierarchy.

Physical Presence Spec version

Select this item to tell OS to support PPI spec version 1.2 or 1.3. Please note that some HCK tests might not support version 1.3.

TPM 2.0 InterfaceType (CRB)

Select the Communication Interface to TPM 2.0 Device

Device Select

Use this item to select the TPM device to be supported. TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

4.7 Tools

UEFI Tech Service

Contact ASRock Tech Service if you are having trouble with your PC. Please setup network configuration before using UEFI Tech Service.

SSD Secure Erase Tool

All the SSD's listed that supports Secure Erase function.

NVME Sanitization Tool

After you Sanitize SSD, all user data will be permanently destroyed on the SSD and cannot be recovered.

Auto Driver Installer

If Auto Driver Installer is enabled, a notification will pop up to help users to install and update required drivers after booting into the system.

Instant Flash

Save UEFI files in your USB storage device and run Instant Flash to update your UEFI.

4.8 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and voltage.

Fan Tuning

Measure Fan Min Duty Cycle.

Fan-Tastic Tuning

Select a fan mode for CPU Fan, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

CPU Fan 1 Setting

Select a fan mode for CPU Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Case Open Feature

Enable or disable Case Open Feature to detect whether the chassis cover has been removed.

4.9 Security Screen

In this section you may set or change the supervisor/user password for the system. You may also clear the user password.

Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Use this item to enable or disable support for Secure Boot.

Intel(R) Platform Trust Technology

Enable/disable Intel PTT in ME. Disable this option to use discrete TPM Module.

4.10 Boot Screen

This section displays the available devices on your system for you to configure the boot settings and the boot priority.

Fast Boot

Fast Boot minimizes your computer's boot time. In fast mode you may not boot from an USB storage device. The VBIOS must support UEFI GOP if you are using an external graphics card. Please notice that Ultra Fast mode will boot so fast that the only way to enter this UEFI Setup Utility is to Clear CMOS or run the Restart to UEFI utility in Windows.

Boot From Onboard LAN

Allow the system to be waked up by the onboard LAN.

Setup Prompt Timeout

Configure the number of seconds to wait for the setup hot key.

Bootup Num-Lock

Select whether Num Lock should be turned on or off when the system boots up.

Boot Beep

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

Full Screen Logo

Enable to display the boot logo or disable to show normal POST messages.

AddOn ROM Display

Enable AddOn ROM Display to see the AddOn ROM messages or configure the AddOn ROM if you've enabled Full Screen Logo. Disable for faster boot speed.

Boot Failure Guard Message

If the computer fails to boot for a number of times the system automatically restores the default settings.

4.11 Exit Screen

Save Changes and Exit

When you select this option the following message, "Save configuration changes and exit setup?" will pop out. Select [OK] to save changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option the following message, "Discard changes and exit setup?" will pop out. Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option the following message, "Discard changes?" will pop out. Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all options. The F9 key can be used for this operation.

Launch EFI Shell from filesystem device

Copy shellx64.efi to the root directory to launch EFI Shell.

DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2.1077(a)

Product Name : Motherboard

Model Number : H610TM-ITX

Conforms to the following specifications:

☒ FCC Part 15, Subpart B, Unintentional Radiators

Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

EU Declaration of Conformity

For the following equipment:

Motherboard

(Product Name)

H610TM-ITX

(Model Designation / Trade Name)

EMC Directive – 2014/30/EU

EN 55032: 2015 / A11: 2020, EN 55035: 2017 / A11: 2020
EN IEC 61000-3-2: 2019, EN 61000-3-3: 2013

RoHS Directive - 2011/65/EU

2015/863/EU, EN IEC 63000:2018

CE (EU conformity marking)

UK
CA

EU Declaration of Conformity

Product:

Product	Motherboard
Model	H610TM-ITX

Authorized Representative (UK-GB):

Name:	Gary Tsui
Address:	Bijsterhuizen 11-11, 6546 AR Nijmegen,The Netherlands
Contact person:	Gary Tsui

This declaration is issued under the sole responsibility of the mentioned Manufacturer. The subject equipment under declaration is in conformity with the UK-GB Regulation(s) below:

The Electromagnetic Compatibility Regulations 2016 (S.I. 2016/1091)

EN 55032: 2015 / A11: 2020, EN 55035: 2017 / A11: 2020, EN IEC 61000-3-2: 2019, EN 61000-3-3: 2013

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

2015/863/EU, EN IEC 63000:2018

The following manufacturer outside the UK-GB is responsible for this declaration: